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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,253	09/11/2003	Moshe Ein-Gal	1358EIN-US	3543
7590	10/04/2004		EXAMINER KAO, CHIH CHENG G	
Dekel Patent Ltd. Beit HaRofim Room 27 18 Menuha VeNahala Street Rehovot, ISRAEL			ART UNIT	PAPER NUMBER
			2882	
			DATE MAILED: 10/04/2004	

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary****Application No.**

10/659,253

**Applicant(s)**

EIN-GAL, MOSHE

**Examiner**

Chih-Cheng Glen Kao

**Art Unit**

2882



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

**DETAILED ACTION*****Drawings***

1. The drawings are objected to because of the following: (Fig. 1, #18, is not in the description), (poor image contrast in Figures 2A, 2B, and 4), (Page 7, line 25, “aperture 26” is not in the drawings), and (Page 7, line 26, “aperture 28” is not in the drawings). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

2. The disclosure is objected to because of the following informality. On page 6, line 4, “motor 5” may be referring to #15 in the drawings. This objection may be obviated by replacing “5” with - -15- - on page 6, line 4. Appropriate correction is required.

***Claim Objections***

3. Claims 5 and 6 are objected to because of the following informalities, which appear to be minor draft errors creating grammatical and lack of antecedent basis problems.

In the following format (location of objection; suggestion for correction), the following suggestions may obviate their respective objections: (claim 5, line 2, “by a motor and said leaves”; inserting a comma after “motor” and deleting “and”) and (claim 6, line 6, “the radiation beam”; replacing “the” with - a- -).

For purposes of examination, the claims have been treated as such. Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 2, 6, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Earl et al. (US Patent Application Publication 2004/0071261) in view of Ein-Gal (US Patent 6266393).

5. Regarding claims 1, 6, and 7, Earl et al. discloses a system and method comprising a radiation beam delivery device (Fig. 4 and Abstract) positionable in a plurality of spatial orientations (Paragraph 14), an IMRT control system adapted to modulate at least an intensity of

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a radiation beam emanating from said radiation beam delivery device depending on at least one of the spatial orientations of said radiation beam delivery device and in accordance with an IMRT intensity map (Paragraph 14), and a multileaf collimator placed in a path of the radiation beam emanating from said radiation beam delivery device, said multileaf collimator comprising radiation blocking leaves (Paragraph 7, "MLC").

However, Earl et al. does not disclose a multilayer multileaf collimator comprising a plurality of layers of radiation blocking leaves being at different positions along a path of a radiation beam generally traverse to the radiation beam.

Ein-Gal teaches a multilayer multileaf collimator comprising a plurality of layers of radiation blocking leaves being at different positions along a path of a radiation beam generally traverse to the radiation beam (Fig. 6).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to modify the system of Earl et al. with the collimator of Ein-Gal, since one would be motivated to incorporate this to better cover irregularly shaped targets (col. 2, lines 4-5) as shown by Ein-Gal.

6. Regarding claim 2, Earl et al. as modified above suggests a system as recited above.

However, Earl et al. does not disclose a collimator comprising a plurality of x-leaves of a first layer in a longitudinal direction and a plurality of y-leaves of a second layer in a cross-over direction angled with respect to said longitudinal direction at an angle in a range of 0 to 90 degrees inclusive.

Ein-Gal teaches a collimator comprising a plurality of x-leaves of a first layer in a longitudinal direction and a plurality of y-leaves of a second layer in a cross-over direction angled with respect to said longitudinal direction at an angle in a range of 0 to 90 degrees inclusive (Fig. 6).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to further modify the system of Earl et al. with the collimator of Ein-Gal, since one would be motivated to incorporate this to better cover irregularly shaped targets (col. 2, lines 4-5) as shown by Ein-Gal.

7. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Earl et al. in view of Ein-Gal as applied to claim 2 above, and further in view of Siochi (US Patent 6757355).

Earl et al. as modified above suggests a system as recited above.

However, Earl et al. does not disclose columns and rows of an intensity map corresponding to widths of leaves, a cell defined as the intersection of one of the columns and rows, a radiation beam passing through the cell, and radiation selectively blocked by x and y-leaves.

Siochi teaches columns and rows of an intensity map corresponding to widths of leaves (col. 3, lines 5-12), a cell defined as the intersection of one of the columns and rows (Fig. 11), a radiation beam passing through the cell (col. 3, lines 50-53), and radiation selectively blocked by x and y-leaves (Figs. 5 and 6).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to modify the system of Earl et al. as modified above with the correspondence and cells of Siochi, since one would be motivated to incorporate these to achieve higher spatial resolution (col. 2, lines 47-52) as implied from Siochi.

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Earl et al. in view of Ein-Gal as applied to claim 1 above, and further in view of Fudamoto (US Patent 5577094).

Earl et al. as modified above suggests a system as recited above. Earl et al. further discloses an IMRT control system operative to control operation of rotation of the delivery device and at least one actuator of the leaves (Paragraph 38 and Fig. 4).

However Earl et al. does not specifically disclose a delivery device rotatable about a longitudinal axis by a motor.

Fudamoto teaches a delivery device rotatable about a longitudinal axis by a motor (Fig. 1, y-axis, and col. 5, lines 7-15).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to modify the system of Earl et al. as modified above with the rotation and motor of Fudamoto, since one would be motivated to incorporate these to achieve a wider range of control of the orientation of the axis of the radiation beam emitted from the irradiation head (col. 1, lines 12-24) as implied from Fudamoto.

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***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (571) 272-2492. The examiner can normally be reached on M - F (9 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



gk



**EDWARD J. GLICK  
SUPERVISORY PATENT EXAMINER**